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AGRICULTURAL MEMORANDUM NO 445

EFFECT OF RETURN-TO-CAPACITY DATE ON WHEAT AND FALLOW ACREAGES IN ENGLAND

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Total England acreages of land under wheat and fallow land (June figures) are available from the successive issues of Agricultural Statistics. The mean return date for England for each preceding autumn was found by weighting the sample return dates for each area (as in Tech. Bull. 24) with respect to the acreage in that area under wheat, barley, oats, mixed corn, rye and fallow (The cereal acreage).

Data for 1959-1968 (June returns) were used.

Wheat acreage.

If W = wheat acreage in 1000 acre units
R = return date on scale S1 = 1, O1 = 4, N1 = 7 etc
n = number of years after 1959
then it was found
$W = 1566 + 36.9R + 48.3n$
if 1963 (a year of severe late snows) was ignored.

Results

Year	W	R	Calculated W	Error
1959	1825	3.9	1710	- 115
1960	1987	10.5	2001	+ 14
1961	1715	4.3	1822	+ 107
1962	2127	9.5	2062	- 65
1963	1823	11.3	(2176)	-
1964	2093	8.6	2124	+ 31
1965	2409	15.1	2413	+ 4
1966	2150	6.2	2133	- 17
1967	2200	6.2	2181	- 19
1968	2306	6.9	2256	- 50

The mean error is thus about 2½% which is good considering that no spring conditions have been included.

The correlation between R and W - ~~483n~~ 48.3n is 0.88 over the nine years (omitting 1963).

Fallow Acreage

There appears to be an "improvement" factor of some 7 units (1000 acres) per year after 1956.

If the (fallow acreage plus 7n) is plotted against R, (the mean return date in England), a smooth curve can be drawn through the nine points (again omitting 1963 where snow was the over-riding factor).

Results

Year	Fallow acres	Graph estimation	Improvement Correction	Estimate	Error
1959	351	347	0	347	- 4
1960	180	190	- 7	183	+ 3
1961	285	330	-14	316	+31
1962	160	200	-21	179	+19
1963	204	188	-28	(160)	-
1964	180	213	-35	178	- 2
1965	149	185	-42	143	- 6
1966	241	265	-49	216	-25
1967	210	265	-56	209	- 1
1968	181	242	-63	179	- 2

The mean error is thus about 5 per cent, which is again good considering that no spring conditions have been included.

The correlation between the fallow acreage (adjusted for improvement) and return date is 0.87.

It can therefore be deduced that the return to capacity date in autumn/winter determines to a large extent the land use pattern of the following summer.

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

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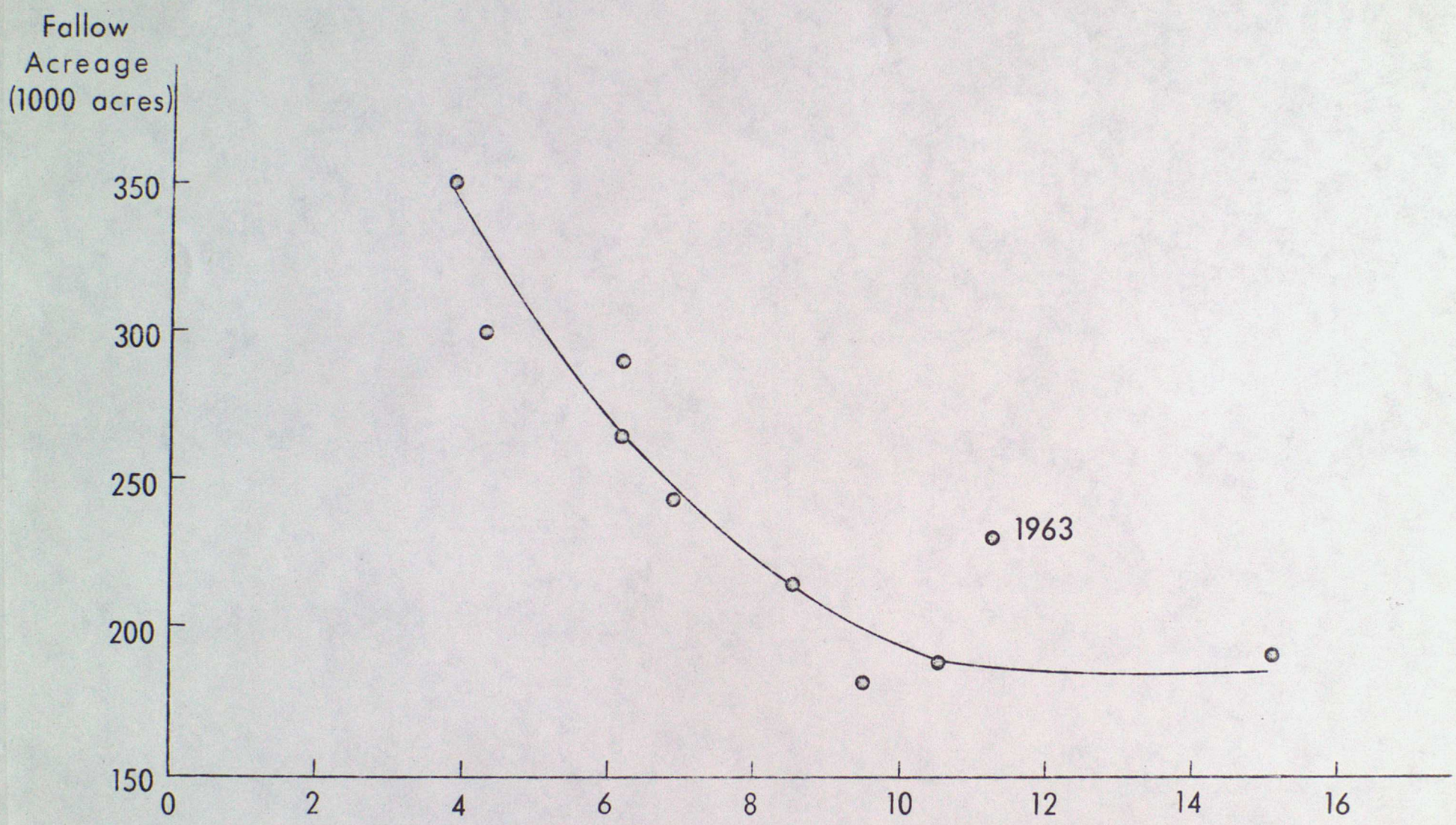

Mean Return Date : England
The previous Autumn